

Remarks

Favorable reconsideration of this application in view of the remarks to follow is respectfully requested. Since the present Response raises no new issues, and in any event, places the application in better condition for consideration on appeal, entry thereof is respectfully requested under the provisions of 37 C.F.R. §1.116.

Prior to discussing the prior art rejections, Applicants take this opportunity to set forth the following brief remarks about their invention. Applicants have discovered a method of providing improved control of quench rate when producing a heat treatable metal product by removing material from the product to achieve a shape near-net to a desired final shape; solution heat treating and quenching the product; and then stretching the product to achieve the desired final shape and aging. The machining of the product to a shape near-net to the desired final shape provides dimensions to take into account a decrease in width and thickness of the product during the stretching to the desired final shape.

Conventionally, solution heat treatments are performed on a product prior to machining, in which the additional material disadvantageously effects quench process steps resulting in reduced strength. By machining the product to remove the excess material prior to solution heat treat, Applicants' minimize the product's thickness during quenching. The reduced thickness resulting from the machining steps prior to solution heat treat increases quench control by reducing the overall material for heat extraction. Following solution heat treat, Applicants stretch the product in order to achieve its' final dimensions and to relieve strength.

Prior to this invention, those in the art machined the products following solution heat treat in order to provide the final orientation of the product. Further, prior to this invention, a method of producing heat treatable products has not been practiced in which the sequence of process

steps include rough machining, heat treatment, stretching and then aging for strength, wherein the rough machining step accounts for changes in dimension resulting from stretching.

Applicants have amended Claims 1, 12, and 13 to more clearly recite that the Applicants' method includes the step of machining the product to a shape near-net to the desired final shape having dimensions to compensate for the decrease in width and thickness that occurring in the product during stretching to the desired final shape. Applicants have also added new Claim 15, which recites that the dimensions of the near-net shape are from about 1.25 wt. % greater to about 2.5 wt. % greater in each of a product width and a product length. Support for the amendment to Claims 1, 12 and 13, and new Claim 15, is found in paragraph 0016 of the Applicants' disclosure.

Accordingly, it is respectfully submitted that the method, as now claimed, clearly describes the benefits obtained, which are not shown or suggested in the prior art. Thus, Applicants respectfully submit that the application is in condition for immediate allowance.

Turning now to the Office Action, Claims 1-8, and 12-14 stand rejected, under 35 U.S.C. §103(a), as allegedly being unpatentable over U.S. Patent No. 5,221,377 to Hunt, Jr. et al. ("Hunt, Jr. et al.") in view of the publication ASM: Vol. 4 Heat Treating pg. 854 ("ASM"). Applicants respectfully traverse for the following reasons.

Applicants submit that the applied prior art fails to render Applicants' invention obvious, since the applied prior art fails to teach or suggest each and every limitations of Applicants' claimed method. "To establish a prima facie case of obviousness of a claimed invention all the claimed limitations must be taught or suggested by the prior art". *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 44, 496 (CCPA 1970). Specifically, the applied prior art fails to teach or suggest producing a heat treatable metal product including the steps of providing an ingot of a heat treatable metal alloy; rolling the ingot to a flat product; removing material from the product

to achieve a shape near-net to a desired final shape; solution heat treating and quenching the product; stretching the product to achieve the desired final shape wherein the shape near-net to the desired final shape has dimensions to compensate for a decrease in width and thickness during the stretching to the desired final shape; and aging the product, as recited in amended Claims 1, 12 and 13.

Hunt, Jr., et al. discloses an alloy composition providing a combination of strength, density, toughness and corrosion resistance, wherein the products of the alloy may be solution heat treated. It is the Examiner's position that Hunt, et al. disclose that a product may be worked, machined and then solution heat treated, since the reference discloses in column 5, lines 55-60, that:

"Once an ingot has been cast from this composition, it is homogenized by heating to one or more temperatures between about 860° and 920°F, after which it is worked (and sometimes machined) into a desired shape. The product, if desired, should then be solution heat treated by heating to one or more temperatures between about 840° or 850°F and about 880° or 900°F to take substantial portions, preferably all or substantially all, of the soluble zinc, magnesium and copper into solution, it being again understood that with physical processes which are not always perfect, probably every last vestige of these main alloying ingredients will not be dissolved during SHT (solutionizing)."

Applicants respectfully disagree and submit the following:

Applicants' method of producing a heat treated product includes the steps of removing material from the product to achieve a shape near-net to a desired final shape; solution heat treating and quenching the product; stretching the product to achieve the desired final shape; and aging the product. The disclosure that the product may be machined does not teach or suggest the limitation that material be removed from the product to achieve a shape near-net to a desired final shape, as required by Applicants' claims. Referring to paragraph 0015 of Applicants' disclosure, the phrase "near net-shape" is defined as meaning the product is dimensionally similar to the dimensions of the final desired shape. Further, the Hunt Jr., et al. reference also fails to teach or suggest stretching the product to achieve the desired final shape, wherein the shape near-net to the desired final shape has dimensions to compensate for a decrease in width and thickness of the product during the stretching to the desired final shape, as recited in amended Claim 1, 12, and 13.

The portion of Hunt Jr., et al. cited by the Examiner only suggests that machining processes may be used following hot rolling. In the proper context, this merely suggests machining processes such as edge trimming to remove tight edges and cracking, which do not include machining the product to dimensions desired of the final shape. Therefore, Hunt Jr., et al. fail to render Applicants' invention obvious, since Hunt Jr., et al. fail or teach or suggest a method of providing a heat treated product that includes the step of removing material from the product to achieve a shape near-net to a desired final shape prior to solution heat treatment, wherein the shape near-net is dimensionally similar to the dimensions of the final desired shape and has dimensions to compensate for a decrease in width and thickness of the product during the

stretching to the desired final shape; and aging the product, as recited in amended Claims 1, 12 and 13.

The ASM fails to fulfill the deficiencies of Hunt Jr., et al., since the ASM also fails to teach or suggest a method of providing a heat treated product that includes the step of removing material from the product to achieve a shape near-net to a desired final shape prior to solution heat treatment, wherein the shape near-net is dimensionally similar to the dimensions of the final desired shape and has dimensions to compensate for a decrease in width and thickness of the product during the stretching to the desired final shape, as required of Claims 1, 12 and 13.

Referring to Page 4, it is the Examiner's position that the ASM teaches that it would be obvious for one having skill in the art to perform a machining step prior to solution heat treating in order to minimize residual stresses and reduce cooling rate differentials. Applicants respectfully disagree and submit the following.

First, Applicants note that there is no disclosure of solution heat treating throughout the referenced section of the ASM. More importantly, the sequence taught by the ASM reference does not include stretching of the near-net shape product to the products final dimensions. Specifically, referring to second to last paragraph on Page 854 of the ASM reference, the reference discloses an approach to minimize residual stresses including the steps of rough machining to within 3.2 mm or less of the finish dimensions, heat treating, and then finish machining. The ASM reference does not teach or suggest the Applicants' method, since the ASM does not disclose or suggest stretching, or machining of a product to a near net shape taking into account the dimensional changes that occur in the stretching of the product from the near net shape to the desired final shape. Further, although the ASM reference discloses rough machining to 3.2 mm or less of the final dimension, without providing the product's final

dimensions, or stretching of the product to provide final dimension, the ASM disclosure does not raise to the teaching of the Applicants' invention.

Referring to paragraph 0016 of Applicants' disclosure, Applicants have discovered, as recited in newly added Claim 15, that the product's dimensions decrease in width and thickness by about 1.25% to 2.5% during stretching, and require that the near net shape product have dimensions to compensate for the change in dimensions during stretching to the products final shape. Therefore, since the ASM reference fails to teach or suggest a stretching step or recognize the dimensional changes that occur in a process including rough machining, solution heat treating, and stretching, the ASM reference fails to render Applicants' method obvious.

The §103 rejection also fails because there is no motivation in the prior art references themselves which suggests modifying the disclosed structures to arrive at the Applicant's claimed method for producing a heat treated product, as recited in amended Claims 1, 12 and 13. The law requires that the prior art reference provide some teaching, suggestion or motivation to make the modification. Here, there is no motivation provided in the disclosures of the applied references to provide Applicants' claimed method. "The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fitch*, 972 F.2d 1260, 1266 23 U.S.P.Q. F.2d 1780, 1783-84 (Fed. Cir. 1992).

Accordingly, the Examiner is respectfully requested to reconsider the application, withdraw the rejections and issue an immediate a favorable action thereon. If upon review of the application, the Examiner is unable issue an immediate Notice of Allowance, the Examiner is respectfully requested to telephone the undersigned attorney with a view towards resolving any outstanding issues.

An early and favorable action is earnestly solicited.

Respectfully submitted,



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